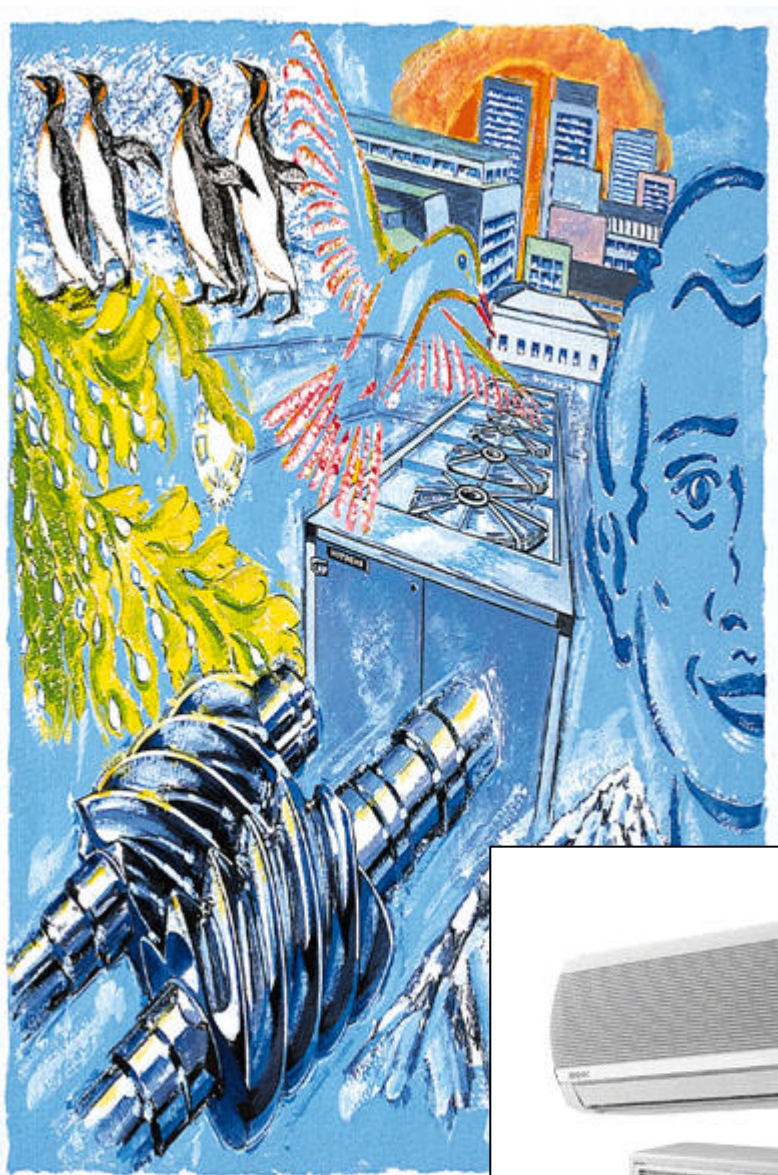




REGULERING

For inverter varmepumpe
type
EXWI – H



Brukerveiledning inverter varmepumpe type EXWI-H Aermec/Sharp

Generelt

Takk for at du valgte et produkt fra Novema kulde. Aggregatet du har kjøpt er av type luftkjølt splitt type med en innedel og en utedel som forbindes med kuldemedierør. Innedelen er utstyr med batteri for kjøling og varme (varme bare ved varmepumpe). Utedelen som leveres ferdig fylt med kuldemedium bl.a. består av kompressor, kondensatorbatteri og vifte. Aggregatet er komplett internt koblet med mikroprosessorstyrt drifts- og sikkerhetsautomatikk slik at kun el. tilknytning til innedelen samt el.forbindelse mellom inne- og utedelen er nødvendig.

Innholdet i denne manualen beskriver i detalj hvordan produktet regulerer og dets sikkerhetsutstyr. Som du vil skjønne er det et kompleks aggregat du har kjøpt men du behøver ikke skjønne dett her for å ha glede av produktet.

Vi har lagt inn originalsidene på engelsk slik at ingen ting går tapt i oversettelsen.

Riktig bruk.

For at en varmepumpe skal virke ordentlig er følgende viktig

- La mest mulig dører stå oppe mellom rommene slik at varmen kan spre seg.
- Skru av annen varmekilde helt eller reduser termostaten slik at du er sikker på at de ikke legger inn effekt.
- For å redusere energiforbruket ytterligere så kan du også gjøre følgende.
- Ved å sette ned temperaturen 2 °C sparer du 10%.
- Juster luftstrøm for maksimal effektivitet. (se eget avsnitt lengre bak.)
- Hold alltid filteret rent
- Ellers er en luft luft varmepumpe en enkel installasjon som kun krever normalt renhold som den viktigste delen av vedlikeholdsrutinene.

Montasje

For å vakuuere kjølerørene på varmepumpe som arbeider med R410A må det benyttes overgang (AD87) på serviceventilen. Dette er for å unngå at feil medium påfylles. Overgang AD87 lagerføres av bla. Moderne Kjøling, Oslo"

Dokumenter endres kontinuerlig. for oppdatert informasjon kontakt oss eller se på vår web side

FUNCTIONS

AH-X08BE/X10BE/X13BE are not provided with the heating function.

1. INDOOR UNIT

1-1 Temperature Adjustment

a. Normal control

Proportional control (P control)

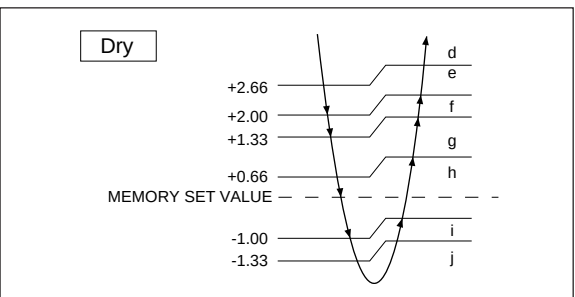
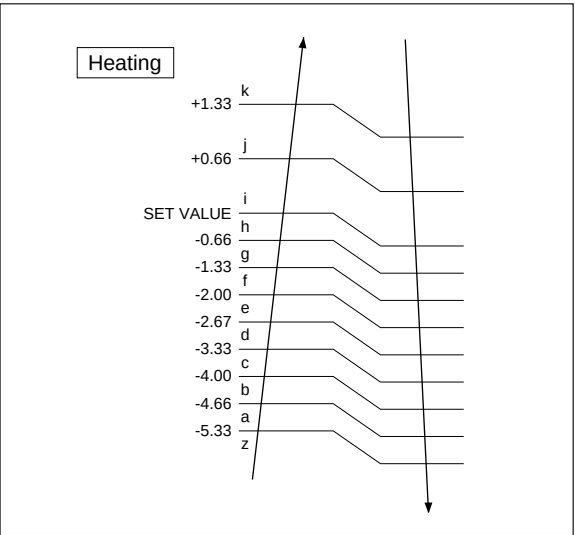
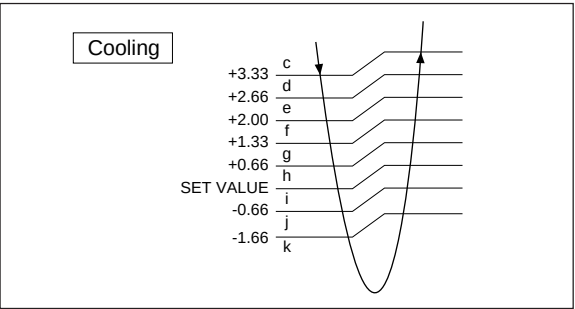
When the temperature zone changes, this control changes the frequency by one rank to move closer to the set value.

Integral control (I control)

When the temperature zone has set time in the same zone, this control changes the frequency by one rank to move closer to the set value. (Excluding the h zone.)

b. Initial control

The initial frequency is determined as shown in the tables below based on the difference between the temperature adjustment setting at the beginning of operation and the room temperature. After operation begins, normal control is performed and therefore the correspondences in the tables below will not hold.



Cooling		Heating		Dry	
Room temp. zone	Frequency Code	Room temp. zone	Frequency Code	Room temp. zone	Frequency Code
c	9	k	OFF (Hot keep fan)	d	5
d	8	j	1	e	4
e	7	i	1	f	3
f	5	h	2	g	2
g	3	g	3	h	1
h	2	f	4	i	1
i	1	e	5	j	0
j	OFF	d	6	Full power operation only	
k	OFF	c	8		
		b	A		
		a	B		
		z	C		

c. Temperature adjustment

The temperature adjustment range is changed by changing the operating mode with the operation switch.

(1) Heating

If the room temperature is in the z zone when operation begins, proportional/integral control is not performed, and the machine runs at frequency code c full power until the i zone is reached. When the h zone is reached, the frequency changes to the frequency code determined by fuzzy calculation, and after that proportional/integral control is performed.

(2) Cooling

If the room temperature is in the c zone when operation begins,proportional/integral control is not performed, and the machine runs at frequency code 9 power until the i zone is reached. When the h zone is reached, the frequency changes to the frequency code determined by fuzzy calculation, and after thatproportional/integral control is performed.

(3) Dry

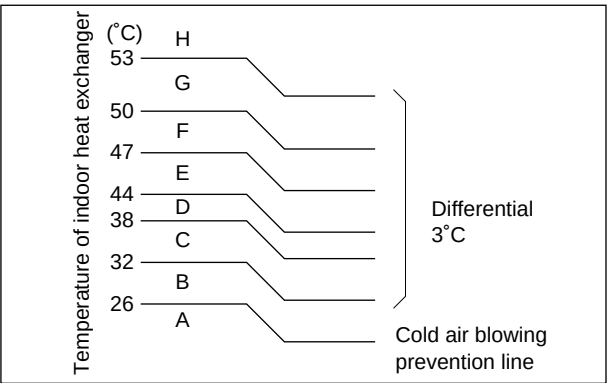
After operation begins, 2 minutes (running at the h zone) of the room temperature is stored in memory, and that becomes the set value.

(4) Circulation

The frequency code 0 is sent to the outdoor machine, and only the fan of the indoor machine runs, the compressor does not run.

1-2 Indoor fan control

This control uses the thermistor for the indoor heat exchanger to control cold air blowing prevention, the indoor fan, and overheating prevention.



(1) Control for indoor freezing prevention

If the temperature of the indoor heat exchanger stays below approximately 0°C for four minutes during cooling or dry, this control stops the compressor. Over 2°C the compressor will run again.

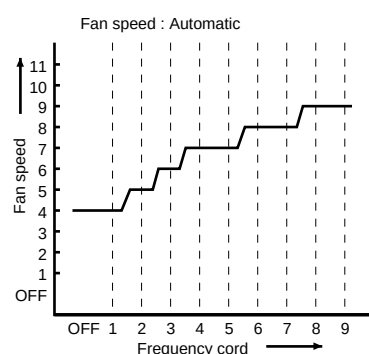
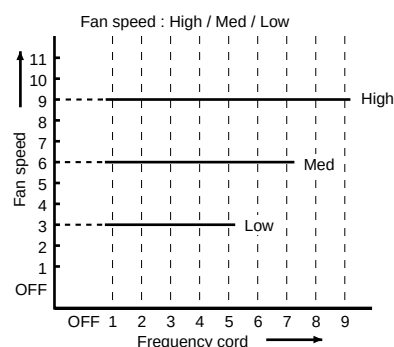
(2) Control for cold air blowing prevention

When heating begins, this control stops the indoor fan until the temperature of the indoor heat exchanger reaches 26°C. It also stops the fan if the temperature goes below 23°C during operation.

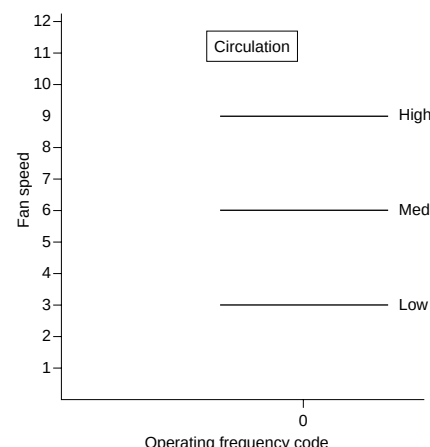
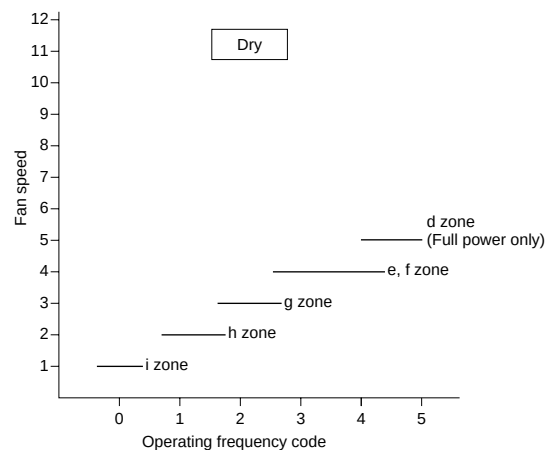
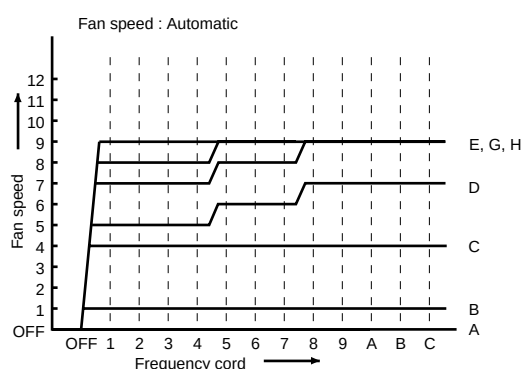
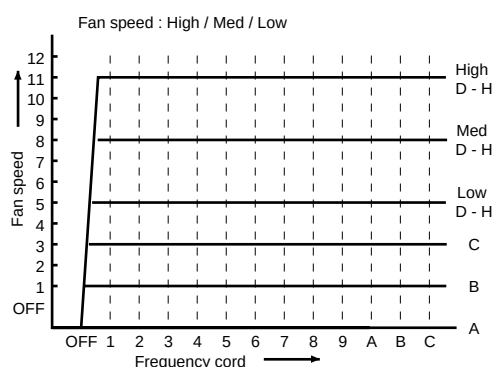
(3) Indoor fan and operating frequency

The indoor fan has 12 speeds, and changing is done in four stages, "Auto", "High", "Med", and "Low". The relations between the indoor fan speed, air quantity setting, operating frequency, and indoor heat exchanger are shown in the following charts.

COOLING



HEATING



1-3 Hot keep

If the room temperature is in the j or k zone during heating, the compressor is turned on and off to prevent overheating.

The fan goes off 30 seconds after the compressor goes off.

Zone	Compressor intermittent time	Fan
J	3 min. on - 3 min. off	Same as Compressor
K	3 min. on - 8 min. off	After "3 min. on - 3 min.off" is repeated 4 times, the compressor goes off, and only the fan continues to repeat "3 min. on - 8 min.off".

1-4 Automatic operation

The operating mode and temperature setting are determined by the room temperature and the external air temperature.

The operating mode will changeover automatically with the following condition.

		※ Outdoor temperature (°C)				
		0	10	18	31	34
Room temperature (°C)	26	※ Cooling (26°C)	※ Cooling (25°C)	※ Cooling (25°C)	Cooling (24°C)	Cooling (25°C)
	21	(24°C)	Heating (23°C)	(22°C)	(Dry) (Room temperature - 2°C)	Cooling (26°C)

※ When the cooling operation only can use winter kit

- From cooling to cooling
Cooling mode will changeover to heating mode when condition of indoor temperature 1.7°C lower than the set temperature conditions for 5 minutes.
- From heating to cooling
Heating mode will change over to cooling mode when condition of indoor temperature 1.3°C higher than the set temperature conditions for 25 minutes under Hot keep condition.
When the set temperature is adjusted within the range of ±2°C by the remote control's key. (▼ ▲), the changeover judgement room temp. will also be shifted within the range of ±2°C.

1-5 ON-timer

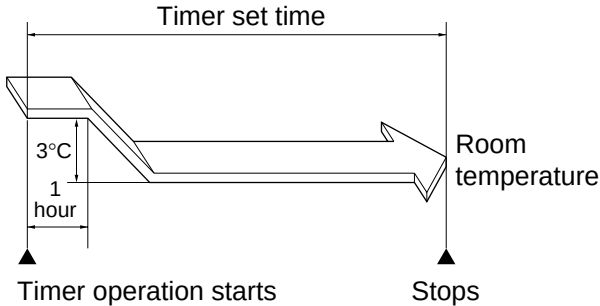
The ON-timer is set by pressing the ON-timer button. In order to attain the set temperature at the set time, the operation starting time is corrected by neuro and fuzzy computing one hour before the set time.

1-6 OFF-timer

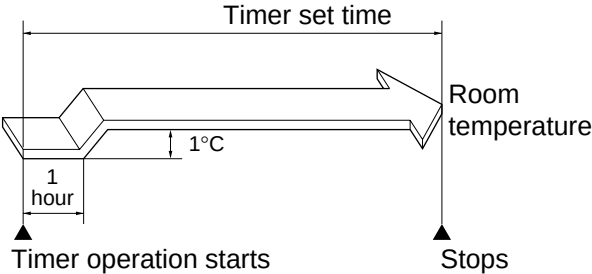
The OFF-timer is set by pressing the OFF-timer button. Operation is as follows:

	Set temperature
Cooling Heating	By fuzzy computing Set the shift up time Final (Cooling setting + 1°C) (Heating setting - 3°C)
Dry	Same as above (Final setting + 1°C)

*During Heating



*During Cooling / Dry



1-7 Swing louvre

The louvre is moved by a stepping motor to perform swing and fixing in the set position. If the "FLOW DIRECTION" button is pressed during swing, it will stop. If the "FLOW DIRECTION" button is pressed while it is stopped, it will swing.

1-8 Restart control

Once the compressor stops, this control prevents it from starting again for 3 minutes. It also prevents starting for 20 seconds immediately following plugging into the power outlet.

1-9 One-hour operation

If this button is pressed when operation is stopped, operation will begin and then stop after 1 hour. If pressed when it is operating, will stop after one hour.

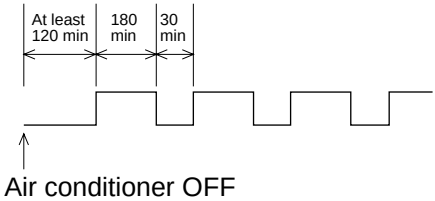
1-10 Full power operation

Immediately begins cooling or heating at maximum power and air flow.

(During heating) Operates at setting of 32°C.
 (During cooling) Operates at setting of 18°C.

1-11 Preheat

When heating is stopped, supplies a small amount of power to the compressor to make heating start more quickly. Operates when the indoor temperature sensor and external air sensor detect that the room temperature and outdoor temperature are low (below 18°C and 5°C, respectively). Stops when the compressor chamber temperature rises above 25°C. Preheat does not operate for 2 hours after heating is stopped. After that, it goes on for 180 minutes and then stops for 30 minutes, repeatedly.

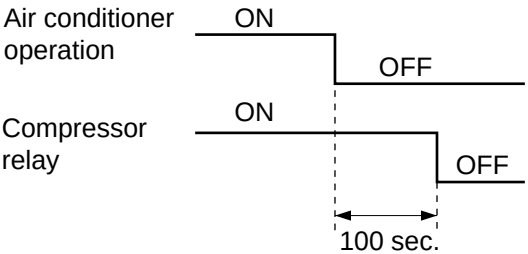


1-12 Power ON start

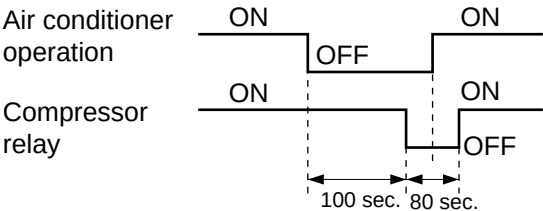
If a jumper wire is inserted into the place indicated JP99 on the indoor control board, and the power plug is inserted. cooling or heating will be automatically determined by the room temperature sensor on the main unit, and operation will begin.

1-13 Compressor relay

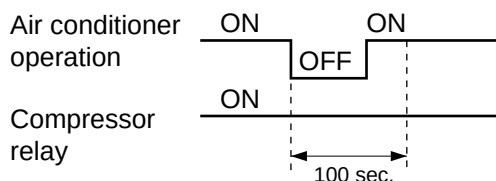
- It is ON during operation, and when operation is stopped, goes OFF after a delay of 150 seconds (not immediately).



- The minimum OFF time of the relay is 30 seconds. It will not go ON again before 30 seconds elapses.



- (3) If air conditioner operation is turned on again during the 150 second delay before the compressor relay goes off, the compressor relay will stay on.



1-14 Power selector

Operation power "H" (High) or "L" (Low) can be selected by switching the POWER SELECTOR slide switch located above the AUX. button.

	Power select	Cooling	Heating
AY-X13BE	H	7.9A	10.5A
	L	7.7A	7.2A
AH-X13BE	H	7.9A	10.5A
	L	7.7A	10.5A

1-15 Auto Restart

When power failure occurs, after power is recovered, the unit will automatically restart in the same setting which were active before the power failure.

Operating mode (Cool, Heat, Dry)

- Temperature adjustment (within 22°C range) automatic operation
- Temperature setting
- Fan setting
- Air flow direction
- Power ON/OFF
- Automatic operation mode setting
- Swing louver

Setting not memorized

- Timer setting
- Full power setting

AU-X08BE/10BE/13BE are not provided with the heating function.

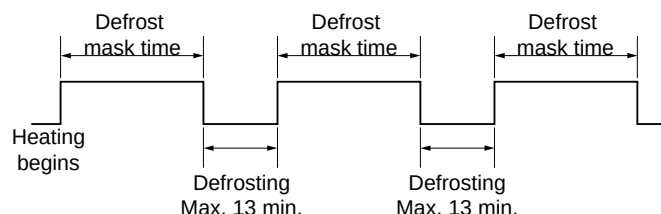
2. OUTDOOR UNIT

2-1 Defrost operation (AE-X08BE/X10BE/13BE)

(1) Overview

Defrosting begins during heating if the conditions for compressor operation time and outdoor heat exchanger temperature are met.

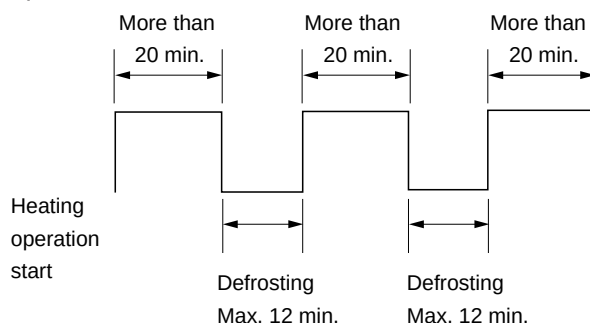
When defrosting begins, the indoor and outdoor fans stop. Defrosting stops when the temperature of the outdoor heat exchanger goes above approximately 5°C or defrosting time exceeds 13 minutes.



2) Defrosting

If the compressor operation time is more than 20 minutes in the heating mode and the outdoor air temperature and outdoor heat exchange temperature satisfy the defrosting conditions, the defrosting operation is started.

When the outdoor sheat-exchanger temperature reaches approx. 5°C or above or when the defrosting time exceeds 12 minutes, the defrosting operation is quit.



(3) During defrosting

When defrosting begins, the compressor stops. Approximately 1 minutes later, the compressor reactivates in the refrigeration cycle, and the outdoor heat exchanger is defrosted.

Each mode is as follows:

The outdoor fan is stopped

The operating frequency is as shown in the table below

The indoor fan is stopped

(4) Defrost stop

When defrosting time exceeds 13 minutes When the temperature of the outdoor heat exchanger rises above approximately 5°C Defrost stop is determined by either of the above conditions, and the compressor is stopped. At the same time, the outdoor fan go ON. The compressor is reactivated in the heating cycle 1 minute after it was stopped, and normal control resumes.

2-2 Frequency control

(1) AC current peak control

Model	Set valve	
	Cool	Heat
AE-X08BE	7.0A	6.5A
AE-X10BE	7.0A	8.5A
AE-X13BE	7.9A	10.5A
AU-X08BE	6.0A	—
AU-X10BE	6.5A	—
AU-X13BE	7.9A	—

- (2) Control for prevention of indoor heat exchanger overheating. If the temperature of the indoor heat exchanger exceeds the overheating prevention line 1 or 2 during heating, the operating frequency is lowered by approximately 5 to 10 Hz. After that, the frequency is lowered by approximately 5Hz once every 60 seconds or 10 Hz once every 120 seconds. When the temperature of the indoor heat exchanger goes below the overheating prevention line 1, the frequency is raised by approximately 5 Hz once every 60 seconds, and normal operation is restored. If the frequency is lowered to minimum frequency without the temperature of the outdoor heat exchanger decreasing and this condition lasts for 1 minute, the compressor will be stopped.

Operating frequency	Overheating prevention line 1 (Lower 5Hz)								
	AE-X13BE	120Hz ~	113Hz	106Hz	100Hz~	50Hz~	43Hz~	37Hz ~	~ 37Hz
	AE-X08BE	~ 90Hz	88Hz ~	83Hz ~	75Hz ~	50Hz ~	43Hz ~	37Hz ~	~ 37Hz
	AE-X10BE		~ 92Hz	~ 88Hz	~ 83Hz	~ 75Hz	~ 50Hz	~ 43Hz	
During normal operation	[°C]	46.11	49.59	51.87	53.29	54.26	53.29	52.34	51.41
During full power operation	[°C]	49.14	51.87	54.75	56.25	58.32	56.76	55.74	54.26

Operating frequency	Overheating prevention line 1 (Lower 5Hz)								
	AE-X13BE	120Hz ~	113Hz	106Hz	100Hz~	50Hz~	43Hz~	37Hz ~	~ 37Hz
	AE-X08BE	~ 90Hz	88Hz ~	83Hz ~	75Hz ~	50Hz ~	43Hz ~	37Hz ~	~ 37Hz
	AE-X10BE		~ 92Hz	~ 88Hz	~ 83Hz	~ 75Hz	~ 50Hz	~ 43Hz	
During normal operation	[°C]	48.26	51.87	51.87	55.24	56.25	55.24	54.26	53.29
During full power operation	[°C]	51.41	51.87	53.77	58.32	59.94	58.32	57.27	56.25

- (3) Control for prevention of outdoor heat exchanger overheating. If the temperature of the outdoor heat exchanger exceeds the overheating prevention line 1 or 2 during cooling, the operating frequency is lowered by approximately 5 to 15 Hz.

After that, the frequency is lowered by approximately 5 once every 60 seconds or approximately 15Hz once every 120 seconds. When the temperature of the outdoor heat exchanger goes below the overheating prevention clear line, the frequency is raised by approximately 5 Hz once every 60 seconds, and normal operation is restored. If the frequency is lowered to minimum frequency without the temperature of the outdoor heat exchanger decreasing and this condition lasts for 1 minute, the compressor will be stopped.

Overheating prevention line 1	56°C	Lower 5Hz once every 60 seconds
Overheating prevention line 1	58°C	Lower 15Hz once every 120 seconds
Overheating prevention line 1	55°C	

- 4) Control for prevention of discharge overheating
 If the discharge temperature exceeds approximately (AU-X13BE:101°C except AU-X13BE:105°C) during compressor operation, the operating frequency is lowered by approximately 5 Hz. After that, the frequency is lowered by approximately 5 Hz once every 60 seconds. When the discharge temperature goes below approximately (AU-X13BE:100°C except AU-X13BE:104°C), the frequency is raised by approximately 5 Hz once every 60 seconds, and normal operation is restored.
 If the frequency is lowered to minimum frequency without the discharge temperature decreasing and this condition lasts for 1 minute, the compressor will be stopped.

- (5) Control for prevention of indoor heat exchanger freezing
 If the temperature of the indoor heat exchanger goes below approximately 5°C during cooling(only Full power operation), the operating frequency is lowered by approximately 5 Hz. After that, the frequency is lowered by approximately 5 Hz once every 60 seconds. When the temperature of the indoor heat exchanger rises above approximately 5°C, the frequency is raised by approximately 5 Hz once every 60 seconds, and normal operation is restored.
 If the temperature of the indoor heat exchanger goes down to approximately 0°C and this condition continues for 4 minutes, the compressor is stopped.
 When the temperature rises above approximately 2°C, normal operation is restored.

2-3 Overcurrent protection

- (1) Compressor lock detection
 If the set value (AE-X08BE: 3.2 A, except AE-X08BE: 2.7A) of AC current is exceeded in 6 seconds when operation begins, operation is stopped. In this case, the compressor outdoor fan does not stop, and 170 seconds after operation is stopped, another try will be made. Three retries are allowed. On the fourth retry, a complete stop request signal is sent to the indoor unit, and the outdoor unit will remain stopped until reset is performed. At this time, the 3-minute delay for control of the outdoor unit will not function; therefore, do not cancel by removing the plug and cutting the power.

(2) DC overcurrent detection, AC overcurrent detection

To protect against overcurrent due to sudden changes in load, the compressor is stopped if the set value (AE-X08BE/AU-X13BE: 47A, AE-X08/10BE, AU-X08BE/10BE/13BE: 26A) DC is exceeded in the DC section, or the set value (AE-X08/10BE, AU-X08/10BE: 11A, AE-X13BE, AU-X13BE: 13A) AC is exceeded in the AC section. In this case, the outdoor fan does not stop, and 170 seconds after operation is stopped, another try will be made. Three retries are allowed. On the fourth retry, a complete stop request signal is sent to the indoor unit, and the outdoor unit will remain stopped until reset is performed. At this time, the 3-minute delay for control of the outdoor unit will not function; therefore, do not cancel by removing the plug and cutting the power.

2-4 Compressor protector control

If the temperature of the compressor chamber exceeds 114°C, the compressor is stopped. In this case, the outdoor fan does not stop, and when the compressor chamber temperature decreases to 100°C three minutes after operation is stopped, another try will be made. Three retries are allowed. On the fourth retry, a complete stop request signal is sent to the indoor unit, and the outdoor unit will remain stopped until reset is performed. At this time, the 3-minute delay for control of the outdoor unit will not function; therefore, do not cancel by removing the plug and cutting the power.

2-5 Power transistor module protector

If the temperature of the chips in the power transistor module exceeds 105 °C, the compressor is stopped. In this case, the outdoor fan does not stop, and when the temperature of the chips in the power transistor module decreases to 105 °C 170 seconds after operation is stopped, another try will be made. Three retries are allowed. On the fourth retry, a complete stop request signal is sent to the indoor unit, and the outdoor unit will remain stopped until reset is performed. At this time, the 3-minute delay for control of the outdoor unit will not function; therefore, do not cancel by removing the plug and cutting the power.

2-6 Power factor module

(AE-X08BE, AE-X10BE, AU-X08BE, AU-X10BE)

If a voltage error (over 400 V), current error (over 17 A), or temperature error (over 90°C) is detected in the power factor module, 170 seconds the compressor is stopped.

(AE-X13BE, AU-X13BE)

If a voltage error (over 420V) is detected at power factor module output voltage, 170seconds the compressor is stopped.

In this case, the outdoor fan does not stop, and 170 seconds after operation is stopped, another try will be made. Three retries are allowed. On the fourth retry, a complete stop request signal is sent to the indoor unit, and the outdoor unit will remain stopped until reset is performed. At this time, the 3-minute delay for control of the outdoor unit will not function; therefore, do not cancel by removing the plug and cutting the power.

2-7 Serial signals

- (1) Serial signals consist of all 96-bit signals.
- (2) If the outdoor unit does not receive a serial signal, it will stop approximately 30 seconds later. Note that this is true only of normal operation; in test mode, it does not stop and operation takes place based on the test mode commands.

FUNCTION AND OPERATION OF PROTECTIVE PROCEDURES

NO	Function	Operation				Self diagnostic display	
		Description	Detection time	Restart condition	Restart times	Indoor	Outdoor
1	Indoor fan lock	Stops operation if no revolution pulse signal is input from the indoor fan motor for one minute.	When indoor fan is revolving	Operation OFF	No limit	Yes	No
	Indoor fan rpm error	Stops operation if the revolution pulse signal from the indoor fan indicates low rpm (approximately 300 rpm or less).					
2	Indoor freezing guard	Lowers the operating frequency if the temperature of the indoor heat exchanger goes below 5°C during cooling. Stops the compressor if the temperature stays below 0°C for 4 minutes.	During cooling and dry	Automatically restarts when the exchange temperature rises above the freezing prevention temperature (above 2°C)	No limit	No	No
3	Indoor overheating control	Lowers the operating frequency if the temperature of the indoor heat exchanger rises above the overheating temperature during heating. Stops the compressor if the temperature stays above the overheating temperature for 1 minute at minimum frequency or less. Set values for overheating temperature During normal operation: 46°C to 54°C During full power operation: 49°C to 58°C	During heating	Automatically restarts when the exchange temperature goes below the overheating temperature.	No limit	No	No
4	DC overcurrent	Stops the compressor if a current of approximately 47/26A or more flows in the power transistor module. Also stops the compressor if the temperature of the power transistor module is exceeds 105°C.	During compressor operation	Automatically restarts after safety time (170 seconds)	4 times	Yes	Yes
5	AC overcurrent	Lowers the operating frequency if the compressor AC current exceeds set valve(*). Show "2-2(1)AC peak control" Stops the compressor if the current exceeds at 40Hz or less set valve(*).	During compressor operation	Automatically restarts after safety time (170 seconds)	4 times	Yes	Yes
6	Compressor lock	Stops the compressor if the compressor AC current exceeds (AE-X08BE: 3.2A, except AE-X08BE:2.7A) immediately after activating the compressor (in 6 seconds).	Immediately after compressor activation.	Automatically restarts after safety time (170 seconds)	4 times	Yes	Yes

(*)

Model	Set value (Normal)	
	During cooling	During heating
AU-X08BE	5.8A	—
AU-X10BE	6.0A	—
AU-X13BE	6.0A	—
AE-X13BE	5.8A	6.3A
AE-X13BE	6.0A	6.3A
AE-X099E	6.0A	6.5A

NO	Function	Operation				Self diagnostic display	
		Description	Detection time	Restart condition	Restart times	Indoor	Outdoor
7	Compressor overheating control	Lowens the operating frequency if the temperature of the compressor chamber thermistor (TH1) rises above 105°C or 101°C. Stops the compressor if the thermistor stays above 105°C or 101°C for 1 minutes at minimum frequency or less.	During compressor operation	Automatically restarts after safety time (170 seconds)	No limit	No	No
8	Compressor high temperature error	Stops the compressor if the compressor chamber thermistor is above 114°C. (Or when TH1 shorts)	During operation	Automatically restarts when thermistor (TH1) temperature falls below 100°C (approximately 30 minutes)	4 times	Yes	Yes
9	Outdoor heat exchanger overheating control	Lowens the operating frequency if the temperature of the outdoor heat exchanger rises above 56°C during cooling. Stops the compressor if the temperature stays above 56°C for 1 minute at minumum frequency.	During compressor operation	Automatically restarts after safety time (170 seconds)	No limit	No	No
10	Outdoor thermistor short	Stops the compressor if an outdoor thermistor (excluding TH1) shorts.	When compressor is activated	Automatically restarts after safety time (170 seconds)	4 times	Yes	Yes
11	Outdoor thermistor open	Stops the compressor if the circuit of an outdoor thermistor breaks.	When compressor is activated	Automatically restarts after safety time (170 seconds)	4 times	Yes	Yes
12	AC abnormal current error	Stops the compressor if if the operating frequency is above 70 Hz and the compressor current is below 1.0 A.	During compressor operation	Automatically restarts after safety time (170 seconds)	4 times	Yes	Yes
13	Serial signal error	Turns the compressor relay off if the indoor unit does not receive a serial signal from the outdoor unit for 8 minutes.	During operation	Automatically restarts less than 8 minutes after operation stops	No limit	Yes	—
		Stops the compressor if the outdoor unit does not receive a serial signal from the indoor unit for 30 seconds.	During operation	Restarts after reception of serial signal	No limit	—	Yes
14	Power factor module (Active filter) error	When an power factor module error input is detected.	During compressor operation	Automatically restarts after safety time (170 seconds)	4 times	Yes	Yes

BREAK DOWN DIAGNOSIS PROCEDURE

Self-diagnostic procedure using display mode

If the timer lamp blinks during operation, the problem can be diagnosed using the following table.

● : Blinks at 2-second intervals ✕ : OFF ○ : ON ◎ : Blinks 3 times at 0.2-second intervals

Condition of indoor and outdoor unit	Display by indoor unit operation lamp				Display by outdoor unit lamp LED 1	Diagnosis	What to check, procedure	Solution
	Displayed in a pattern which comes on at the same time as the timer lamp →○×○×○×○×○→ 4 seconds off							
Normal	×	×	×	×	●	Normal		
	×	×	○	×	◎ Once	Compressor lock error	Does compressor active ? Does it go off immediately after active ?	1. Apply an external shock to the compressor. 2. Replace the compressor.
	×	×	×	○	◎ Twice	Overheat of the compressor error (protector operating) or outdoor compressor thermistor TH1 short	1. Is the discharge outlet of the outdoor unit clogged ? 2. Is the power supply voltage at least 198 V at full power operation ? 3. Check for refrigerant leaks at the tubing connections. 4. Measure the resistance of compressor thermistor TH1 on the outdoor unit (see Figure 2). 5. Measure the resistance of heat exchanger pipe thermistor TH2 on the indoor unit (see Figure 1).	1. Clear the discharge outlet. 2. Assure power supply voltage. 3. Refill to rated amount. 4. Replace the outdoor thermostat assembly. 5. Replace the indoor control board assembly or only TH2.
	×	×	○	×	◎ 3 times	DC overcurrent error	1. Check the circuit in the power transistor module. 2. Is the outdoor fan revolving ?	1. Replace power transistor module
	×	×	×	○	◎ 4 times	Short circuit of the thermistor error	1. Measure the resistance of thermistor TH2 on the outdoor unit (see Figure 2).	1. Replace the outdoor thermistor assembly.
	×	×	○	×	◎ 5 times	Open circuit of the thermistor error	1. Are the connectors of the outdoor unit thermistors well attached ? 2. Measure the resistance of thermistors TH1 and TH2 on the outdoor unit (see Figure 2).	1. Reattach. 2. Replace the outdoor thermistor assembly.
	×	×	×	○	◎ 6 times	AC abnormal current error	1. Can voltage be detected at the current transformer on the outdoor unit control board?	1. Replace the outdoor control board assembly (Current transformer wire break.)
	×	×	○	○	◎ 7 times	AC overcurrent error	1. Is the discharge outlet of the outdoor unit clogged ?	1. Clear the discharge outlet.
	×	○	○	×	◎ 11 times	Power factor module error	1. Check wiring of power factor module.	1. Replace the power factor module.
	○	×	×	○	×	Indoor fan out of order	1. Is the fan motor locked ? 2. Is the wiring connector firmly fitted ? 3. Is the speed signal applied to the motor ?	1. Replace fan motor 2. Reattach. 3. Replace the indoor control board assembly.
Indoor unit operating Outdoor unit completely stopped	○	×	×	○	×	Serial short	1. Check the wiring between units.	1. Rewire.
					○	Serial open	1. Check the wiring between units.	1. Rewire.
	○	×	×	×	○	Outdoor power supply doesn't turn on. Wiring mistake.	1. Check the wiring between units. 2. Check the fuse in the outdoor unit. 3. Indoor control board. 4. Outdoor control board.	1. Rewire. 2. Replace the fuse, replace the outdoor board assembly. 3. Replace the board. 4. Replace the board.

Note: 1. Normal : Only the timer lamp blinks. Error : Displayed by blinking of run lamp (above table).
 2. If the power plug is removed from the outlet or the breaker is switched to "OFF", the self-diagnostic memory will be erased.
 3. Example of outdoor unit LED 1 blinking :

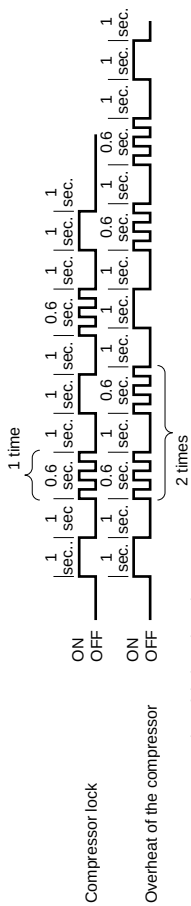


Figure 1 Temperature properties of indoor thermistors

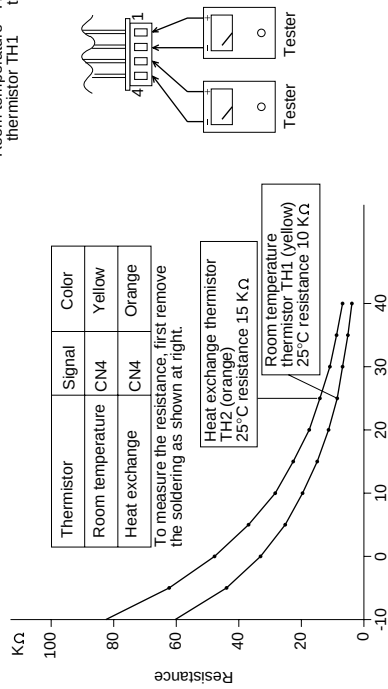
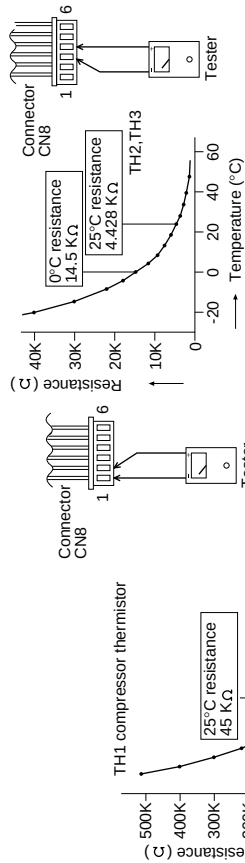


Figure 2 Temperature properties of outdoor thermistors



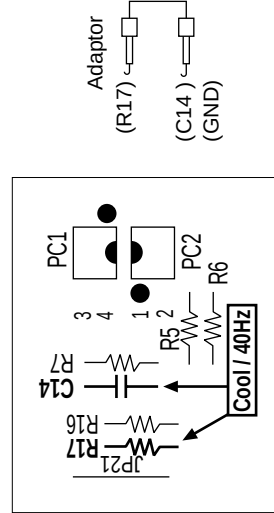
To measure the resistance, first remove the connector from the board.

Thermistor	No.	Connector	Color
Compressor thermistor	TH1	No. 1 to 2	Red
Heat exchanger pipe thermistor	TH2	No. 3 to 4	Orange
Outdoor temp. thermistor	TH3	No. 5 to 6	Green

Cautions when attaching or removing the board

When operating only the outdoor unit (cooling 40 Hz fixed mode) To make only the outdoor unit run in cooling mode, short the places marked with arrows below with an adaptor, and apply a voltage of 220 ~ 240 V AC to 1 and N on the terminal board.

(Avoid operating the outdoor unit alone for long periods of time.)



To Outdoor control board

Microcomputer terminal	Input signal
Pin No. 43	0 Low input
Pin No. 42	1 High input

REFRIGERATION CYCLE

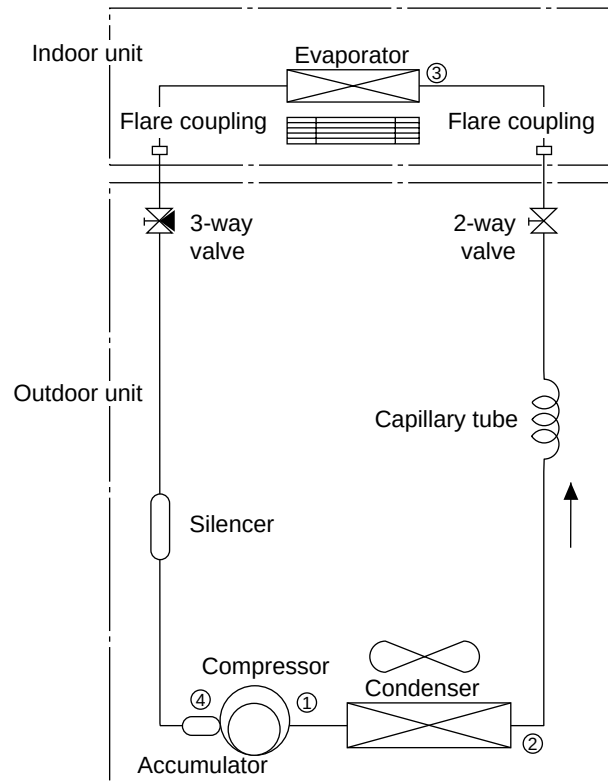


Figure R-1. Refrigeration Cycle for AH-X08BE/X10BE/13BE

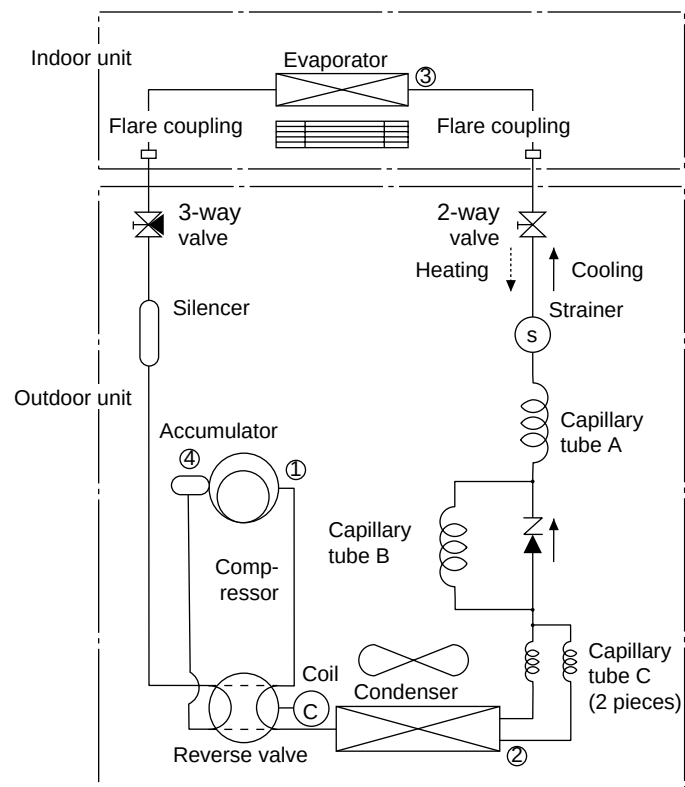


Figure R-2. Refrigeration Cycle for AY-X08BE/10BE/13BE

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